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Mohsen Maddah, Arsalan Salari & Maryam Momeni

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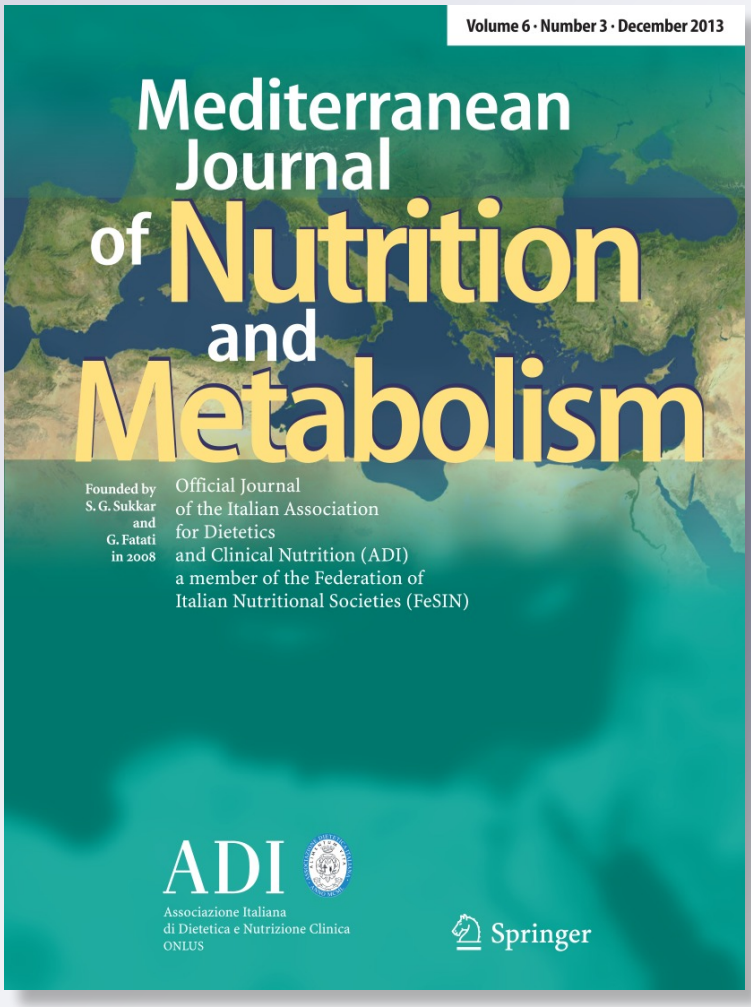

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SHORT COMMUNICATION

Iranian patients with coronary artery disease: rural versus urban residents

Mohsen Maddah · Arsalan Salari · Maryam Momeni

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Abstract In Iran, coronary artery disease (CAD) is the leading cause of mortality. There is less information on urban–rural difference in CAD in Iran. Between June 2010 and December 2011 a total of 288 patients (186 urban and 102 rural) with angiography-approved CAD were sequentially recruited in the main heart hospital in Rasht, northern Iran. Data on age, living areas, educational levels, blood lipids, blood glucose levels, blood pressure, body mass index, waist circumference, cigarette smoking and current drug therapy were collected. In the rural men the prevalence of hypertension, diabetes and smoking was lower than the urban men and the prevalence of other risk factors was not different. In the rural women the prevalence of overweight/obesity and waist circumference was lower than the urban women and the distributions of other measured risk factors were the same. This study showed that Iranian urban and rural women were not behind men regarding age for developing CAD.

Keywords Coronary artery disease · Developing countries · Iran · Rural

M. Maddah (✉)
Department of Human Nutrition, School of Public Health, Guilan University of Medical Sciences, P.O. Box 41635-3197, Rasht, Iran
e-mail: maddahm@yahoo.com

A. Salari (✉)
Department of Cardiology, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran
e-mail: ar.salari55@gmail.com

M. Momeni
Department of Nursing and Midwifery, Qazvin University of Medical Sciences, Qazvin, Iran

Introduction

The burden of non-communicable diseases in rural areas of developing countries is rising [1, 2]. A rise in prevalence of coronary artery disease (CAD) risk factors in rural areas has important public health implications since rural populations have limited access to health care and can least afford to pay for the high treatment cost of CAD.

Islamic Republic of Iran is facing the challenge of an emerging epidemic of CAD and several surveys have examined the prevalence of CAD risk factors in urban Iranians [3, 4], but data from rural areas are sparse. Despite rapid urbanization almost half of the populations in Guilan province still live in rural areas. This study aimed to study urban and rural differences in CAD risk factors in hospitalized patients with documented CAD in Guilan, northern Iran.

Method

A total of 288 patients (186 urban and 102 rural) with angiography-approved CAD were sequentially recruited between June 2010 and December 2011 in the main heart hospital in Rasht, northern Iran. CAD was defined as coronary stenosis more than 50 % in at least one vessel in angiography. Data on age, living areas, educational levels, blood lipids, blood glucose levels, blood pressure, body mass index, waist circumference, cigarette smoking and current drug therapy were collected. The patients gave written consent for participation in the study. The ethical committee of the Guilan University of Medical Sciences approved this study.

Student *T* test and Chi-squared test were used to compare the measured variables between two groups of patients

Table 1 Comparison of age, anthropometry and coronary risk factors in men and women with coronary artery disease living in urban and rural in Guilan, northern Iran

	Men		Women	
	Urban ($n = 106$)	Rural ($n = 51$)	Urban ($n = 80$)	Rural ($n = 51$)
Age (years)	56.7 ± 10.9	59.3 ± 12.4	60.9 ± 8.3	60.2 ± 8.2
BMI (kg/m^2)	25.9 ± 7.7	25.8 ± 4.6	30.6 ± 5.8*	27.3 ± 6.7
WC (cm)	94.9 ± 8.7	95.9 ± 11.2	106.3 ± 10.0*	95.0 ± 12.6
Obesity (%)	53.5	50.0	83.3**	55.6
HTN (%)	70.8*	56.9	72.5	76.5
DM (%)	24.5**	15.7	38.8	37.3
HLP (%)	73.6	72.5	80.0	78.4
Smokers (%)	28.3**	15.6	0	0
Ex-smokers (%)	37.7*	31.4	0	0

BMI Body mass index, *WC* waist circumference, *HTN* hypertension, *DM* diabetes, *HLP* hyperlipidemia

* $P < 0.05$

** $P < 0.005$

living in urban and rural areas. P value <0.05 was considered as the level of significance. Analyses were performed using the statistical package SPSS software, version 16.0 for windows (SPSS Inc®. headquarter, Chicago, USA).

Results

Table 1 shows distribution of the measured risk factors in the urban and rural men and women patients. The prevalence of hypertension, diabetes and smoking was lower in the rural men than the urban men. In the rural women the prevalence of overweight/obesity and waist circumference was lower than the urban women and the prevalence of other measured risk factors were not different. The proportion of people with <5 years schooling among the rural patients were twice than the urban patients.

Discussion

While increased burden of cardiovascular disease among rural residents was reported in some developing countries [5, 6] there are no data on prevalence of CAD in rural areas in Iran. Our study is the first to report the distribution of CAD risk factors among rural versus urban Iranian patients with CAD. In Iran, rural population is visited by family physicians in rural public health centers. These services and drug prescription are not free. Factors that are against effective medical treatment include difficulties with people living in remote rural areas getting to health center, difficulties with drug supplies and economic problems with diagnosis and treatment of CAD.

These data showed that prevalence of diabetes, smoking and hypertension were lower among the rural men than the urban men, and the rural women were less likely to be overweight/obese than the urban women. Our findings are in agreement with the results of a recent national survey in Iran which indicated that the prevalence of major risk factors for CAD was considerably less among rural than urban residents [7]. Nevertheless, we found that mean age for developing CAD was not different between the urban and rural patients.

This study showed that women in both urban and rural areas developed CAD at the same age as the men did. We previously reported that Iranian urban women are not behind men regarding CAD [8]. We cannot give any evidence-based justification for developing CAD in rather low age in Iranian women especially in rural areas. Undernutrition during childhood, inadequate nutrition regarding antioxidants, stress, lack of routine health check and good control for CAD risk factors all possibly predispose rural residents, especially women, to CAD more than urban residents. Detailed studies are needed to clarify this matter.

In conclusion, this study showed that the distribution of some of the measured risk factors for CAD were different between the urban and rural patients in northern Iran. In the present study, in rural and urban areas, women developed CAD not later than the men.

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Conflict of interest None.

References:

1. Hi L, Tang X, Song Y, Li N, Li J, Zhang Z, Liu J, Yu L, Xu H, Zhang J, Hu Y (2012) Prevalence of cardiovascular disease and risk factors in a rural district of Beijing, China: a population-based survey of 58308 residents. BMC Public Health 12:34–44
2. Liu Z, Albanese E, Li S, Huang Y, Ferri CP, Yan F, Sousa R, Dang W, Prince M (2009) Chronic disease prevalence and care among the elderly in urban and rural Beijing, China—a 10/66 Dementia Research Group cross-sectional survey. BMC Public Health 9:394–405
3. Sarraf-Zadegan N, Boshtam M, Malekafzali H, Bashardoost N, Sayedtabatabaie FA, Rafiei M, Khalili A, Mostafavi S, Khatami M, Hasanvand R (1999) Secular trends in cardiovascular mortality in Iran, with special reference to Isfahan. Acta Cardiol 54:327–333
4. Hadegh F, Harati H, Ghanbarian A, Aziz F (2009) Prevalence of coronary heart disease among Tehranian adults. East Mediterr Health J 15:157–166
5. Chadha SL, Gopinath N, Shekhawat S (1997) Urban–rural differences in the prevalence of coronary heart disease and its risk factors in Delhi. Bull World Health Organ 75:31–38
6. Harris DE, Hamel L, Aboueissa A, Johnson D (2011) A cardiovascular disease risk factor screening program designed to reach rural residence of Maine, USA. Rural Remote Health 11:1727
7. Esteghamati A, Meysamie A, Khaililzadeh O, Rashidi A, Haghazali M, Asgari F, Kamgar M, Goya MM, Abbasi M (2009) Third national Surveillance of risk factors of non-communicable disease (SuRFNCD-2007) in Iran: methods and results on prevalence of diabetes, hypertension, obesity, central obesity, and dyslipidemia. BMC Public Health 29:167
8. Maddah M, Chinikar M, Hoda S (2007) Iranian women with coronary artery disease: not behind the men. Int J Cardiol 115:103–104